DISCUSSION OF RECOMMENDATIONS OF THE NRC-SPONSORED "STUDY ON FIRE PREVENTION AND CONTROL SYSTEMS IN CANADA"

EXAMEN DES RECOMMANDATIONS DE L'ÉTUDE PARRAINÉ PAR LE CNRC SUR LA PRÉVENTION ET LA LUTTE CONTRE L'INCENDIE

Joint Meeting of the National Research Council and
the Association of Canadian Fire Marshals and Fire Commissioners
held in Toronto, 13 July 1983

Registre de la réunion conjointe du
Conseil national de recherches Canada et de
l'Association of Canadian Fire Marshals and Fire Commissioners
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PRÉFACE

Une des recommandations de l'Étude sur la prévention et la lutte contre l'incendie au Canada parrainée par le Conseil national de recherches Canada voulait que ce dernier convoque un congrès rassemblant des personnes chargées de la protection contre l'incendie dans chacune des provinces et des territoires, afin d'étudier le rapport et la recommandation relative à l'établissement d'un conseil national de lutte contre l'incendie. Suivant l'avis émis par les autorités compétentes dans chacune des provinces et territoires, le CNRC et l'Association of Canadian Fire Marshals and Fire Commissioners ont tenu à ce sujet une réunion. Le présent registre constitue le compte rendu de cette réunion.

PREFACE

One of the recommendations of the NRC-sponsored Study on Fire Prevention and Control Systems in Canada was that the National Research Council of Canada convoke a congress of provincial government delegates made up of individuals responsible for fire protection in each province and territory, to consider the report and the recommendation that a Canada-wide representative fire council be established. Following the advice of the authorities responsible for fire matters in the provinces and territories, NRC joined with the Association of Canadian Fire Marshals and Fire Commissioners in the holding of a meeting to achieve this purpose. This report is the record of that meeting.

PROCÈS-VERBAL

1. Le président, Lorne W. Gold du Conseil national de recherches, a ouvert la réunion en souhaitant la bienvenue aux personnes présentes au nom du CNRC. Après ce préambule (voir Appendice 1, p. 39), M. Gold a remercié l'ACFMFC d'avoir fourni une occasion d'examiner le rapport de l'étude en présence d'un vaste auditoire de personnes intéressées. C. Findlay, président de l'ACFMFC, a souhaité la bienvenue au nom de l'Association et il a rappelé que cette étude était le résultat d'une requête déposée par l'ACFMFC en 1976.

2. Les mesures prises par le CNRC jusqu'à présent ont été résumées par M. Gold. Celui-ci a déclaré que le but de cette réunion était d'examiner les conclusions et les recommandations du rapport de l'étude parrainée par le CNRC sur la prévention et la lutte contre l'incendie au Canada et en particulier la troisième recommandation adressée au CNRC et qui porte sur la création d'un Conseil canadien de lutte contre l'incendie. Le compte rendu de la réunion viendra en aide à l'ACFMFC et au CNRC relativement aux autres mesures qui pourraient être prises par chacun de ces organismes pour donner suite au rapport et à ses recommandations. Les commentaires de M. Gold et ceux des autres intervenants font partie du compte rendu de la réunion (ci-joint) qui inclut également les faits marquants des discussions subséquentes.

MINUTES

1. The Chairman, Dr. L.W. Gold of the National Research Council, called the meeting to order at 0900 and welcomed those present on behalf of NRC. Following introductions (see Appendix 1, p. 39) Dr. Gold expressed thanks to ACFMFC for providing this opportunity to review the report of the study in the presence of a broad spectrum of interest. Mr. C. Findlay, President of the ACFMFC, extended the welcome of the Association, noting that the study had resulted from a request by the ACFMFC in 1976.

2. The actions of NRC to date were summarized by Dr. Gold. He stated that the purpose of the meeting was to consider the conclusions and recommendations of the report of the NRC-sponsored "Study on Fire Prevention and Control Systems in Canada" and, in particular, the third recommendation to the NRC concerning the formation of a Canadian fire council. The proceedings of the meeting will guide the ACFMFC and the NRC as to further action each may take on the report and its recommendations. Dr. Gold's complete remarks and those of subsequent speakers appear in the Proceedings of the meeting (attached), together with highlights of ensuing discussions.

3. The formation and activities of the NRC Associate Committee on Research for the Fire Services were outlined by the committee chairman, Mr. G.W. Shorter.

3. G.W. Shorter, président du Comité associé de recherche pour les services d'incendie, a présenté un bilan des activités de ce comité depuis sa création.

4. Les conclusions de l'étude qui touchent aux codes et normes ont été passées en revue par H.D. Adam du Conseil canadien des normes.

5. Le point de vue des municipalités a été présenté par D.V.P. Cardillo, maire de Kitchener, Ontario.

6. Le point de vue des services d'incendie a été présenté par B.A. Bonser, chef du service d'incendie de Toronto et président de l'Association canadienne des chefs de pompiers.

7. C. Findlay a parlé au nom de l'ACFMFC. Il a déclaré que l'ACFMFC avait examiné la recommandation de l'étude parrainée par le CNRC sur la prévention et la lutte contre l'incendie au Canada portant sur la création d'un Conseil canadien de lutte contre l'incendie. Après mûre réflexion, les membres de l'ACFMFC ont décidé de recommander à leur gouvernement respectif que les fonctions du Conseil canadien de lutte contre l'incendie soient assumées par l'ACFMFC, comme l'étude de propose. La déclaration de C. Findlay est reproduite à la page 27 du compte rendu.

4. The findings of the study bearing on codes and standards were reviewed by Mr. H.D. Adam, Director, Standards Council of Canada.

5. The municipal viewpoint was presented by Mr. D.V.P. Cardillo, Mayor of Kitchener, Ontario.

6. The fire service viewpoint was presented by Mr. B.A. Bonser, Fire Chief of Toronto and President of the Canadian Association of Fire Fighters.

7. Mr. Findlay spoke for the ACFMFC. He stated that the ACFMFC has reviewed the recommendation of the NRC-sponsored "Study on Fire Prevention and Control Systems in Canada", that a national fire council be established. After due consideration, the members of the ACFMFC have decided to recommend to their respective governments that the ACFMFC carry out the functions of a national fire council, as proposed in the study. Mr. Findlay's statement appears on page 27 of the Proceedings.

8. The Chairman invited Prof. G.W. Heinke (University of Toronto) and Mr. J.J. McCully (Algonquin College) to speak on the training and education of fire protection personnel. Mr. W. McLaren, representing the Canadian Fire Safety Association, spoke on fire safety programs and their coordination.

8. Le président a invité G.S. Heinke (Université de Toronto) et J.J. McCully (Collège Algonquin) à parler des programmes d'entraînement et de formation à l'intention du personnel affecté à la sécurité incendie. W. McLaren, représentant l'Association canadienne de sécurité incendie, a parlé des programmes de sécurité incendie et de leur coordination.

9. Le rapporteur, H.B. Dickens, a résumé les débats de la journée. Aucune autre discussion n'a eu lieu par la suite. La séance a été levée à 17 heures.

9. The Rapporteur, Mr. H.B. Dickens, summarized the day's proceedings. There was no further discussion, and the meeting was adjourned at 1700.

COMPTE RENDU DE LA RÉUNION

H.B. Dickens

M. Gold a amorcé les travaux de la matinée en exprimant le point de vue du Conseil national de recherches (CNRC) concernant le rapport de l'Étude sur la prévention et la lutte contre l'incendie au Canada. Il a rappelé les trois recommandations formulées dans cette étude à l'intention du CNRC. Le CNRC a donné suite aux deux premières recommandations, en créant par exemple le Comité associé de recherches pour les services d'incendie (CARSI). La réunion du jour répondait à la troisième recommandation. Cette réunion visait à rassembler les personnes intéressées afin de déterminer le type de soutien dont un conseil national ou un organisme de lutte contre l'incendie devrait bénéficier. M. Gold a fait savoir que le Conseil du CNRC ne s'est pas engagé à prendre des mesures particulières à ce sujet mais qu'il tiendrait compte de toute demande qui lui serait adressée.

Un bref exposé a suivi, portant sur la formation et les premiers travaux du Comité associé de recherches pour les services d'incendie (CARSI) que préside Gordon Shorter. Ce comité, qui s'est réuni pour la première fois en novembre 1982, comprend dix-neuf membres, spécialistes de différents domaines et représentants de toutes les régions. Le comité a déjà amorcé les discussions concernant certains problèmes actuels comme ceux posés par les raccords de tuyau, les vêtements de protection, les masques filtrants et les essais sur la mousse.

M. Hugh Adam du Conseil canadien des normes (CCN), à qui on avait demandé d'aborder la question des codes et des normes, a ensuite pris la parole. Il a relevé certaines observations contenues dans le rapport et a comparé l'impact potentiel des normes avec le coût de leur élaboration, indiquant par exemple que le coût des incendies au Canada représentait 1,5 p. cent du produit national brut. Il existe d'autres problèmes concernant les normes qui ne sont pas nécessairement liés au coût; il ne semble pas que l'élaboration des normes essentielles de sécurité soit freinée à cause d'un manque de ressources financières. M. Adam a souligné que des démarches avaient été entreprises auprès du CCN afin que ce dernier subventionne certains travaux de comités. Il a cité à cet effet la résolution de l'Association of Canadian Fire Marshals and Fire Chiefs (ACFMFC); le CCN a donné un accord de principe à cette résolution mais est cependant d'avis qu'il faut poursuivre la recherche sur la nécessité d'un financement. La normalisation ne représente qu'un élément du domaine d'application du conseil de lutte contre l'incendie proposé. Par ailleurs, il existe déjà trois conseils de lutte contre l'incendie, agissant respectivement sous les auspices des Laboratoires des assureurs du Canada, l'Association canadienne de normalisation et Warnock-Hersey. Ces conseils ont plusieurs points en commun, et de par leurs activités, entrent en concurrence. M. Adam suggère d'examiner ces points communs (au niveau des membres, etc.) en raison de leur implication sur la troisième recommandation.

Les remarques de M. Adam ont suscité plusieurs réflexions. Entre autre, que le conseil de lutte contre l'incendie proposé dans le rapport semble se préoccuper davantage des politiques de mise en oeuvre des recommandations que du genre de problèmes traités par les conseils existants. On a aussi relevé

la nécessité d'allouer des subventions suffisantes aux comités de normalisation, afin de permettre l'embauche de personnel qualifié. Il a également été suggéré que les provinces contribuent financièrement à ces travaux étant donné le grand nombre et la diversité des organismes qui utilisent les normes. De plus, on a constaté qu'il est difficile de convaincre les responsables provinciaux des avantages que retireraient les provinces en contribuant, au niveau national, à l'élaboration des normes. Le Comité consultatif interprovincial du Code national du bâtiment a été cité comme exemple de coordination au niveau provincial dans le domaine des codes du bâtiment.

M. Gold a résumé la discussion en soulignant la nécessité de coordonner davantage les activités de financement; il a évoqué les difficultés du CNRC sur ce plan, même en ce qui regarde l'aide apportée au CNB, CNPI et au nouveau CARSI. Il a déclaré ensuite, ce qu'il a répété à plusieurs reprises au cours des discussions, que le CNRC dispose de ressources limitées et peut difficilement satisfaire à tous les besoins exprimés.

M. Cardillo, se fondant sur son expérience de maire de Kitchener, a présenté le point de vue des autorités municipales. Il a souligné le fait que chaque conseil municipal doit être conscient de l'importance d'intégrer la protection contre l'incendie à l'ensemble des activités de la collectivité. Il est tout à fait possible de se conformer aux normes établies par le Ontario Fire Marshal's Office et tous les efforts doivent être entrepris en ce sens. Les agents du bâtiment et les responsables de la sécurité incendie jouent un rôle important dans l'application des codes du bâtiment et de prévention des incendies; de plus, les incertitudes à savoir qui détient l'autorité suprême engendrent un certain nombre de problèmes. Des compétences solides sont indispensables, ainsi qu'une meilleure coordination et définition des différents rôles.

M. Cardillo estime que les propositions du rapport relatives aux programmes de prévention des incendies et d'éducation sont valables et réalisables par le biais d'une étroite coopération des provinces et des municipalités. Les municipalités doivent consulter les constructeurs et promoteurs lors de l'élaboration et de l'application des exigences relatives aux normes de qualification des personnes chargées des systèmes de protection contre les incendies, auquel cas leur acceptation pourrait alors s'avérer impossible. M. Cardillo a également abordé le double rôle d'extinction et de prévention recommandé pour les services d'incendie, précisant que ce rôle ne créerait pas nécessairement une demande accrue de pompiers mais exigerait une formation supplémentaire et entraînerait des dépenses additionnelles pour la municipalité. À propos de la formation et des cours offerts au personnel chargé de la protection contre l'incendie, M. Cardillo a mentionné que les services d'incendie municipaux s'en remettent dans la plupart des cas, aux autorités provinciales pour définir les normes et niveaux de formation du personnel. En ce qui concerne la coordination des organisations de lutte contre l'incendie, il a indiqué que la mise en oeuvre de la recommandation touchant au développement de programmes officiels d'aide mutuelle entre municipalités est souhaitable mais difficile étant donné les structures gouvernementales actuelles. Les services d'incendie devraient être regroupés en services d'incendie régionaux pour remplir ce rôle efficacement. Il n'y a

pas de service d'incendie régional en Ontario, bien que la police et les services sociaux et de santé publique fonctionnent sur une base régionale dans la municipalité de Waterloo. L'amélioration des systèmes d'incendie municipaux est fonction de l'importance et de la situation géographique de la municipalité. Si elle n'obtient pas une aide substantielle et les informations nécessaires, une municipalité est limitée par ses propres ressources. L'examen du système de services d'incendie demeure toutefois valable, compte tenu des coûts opérationnels annuels des services d'incendie municipaux. Il serait souhaitable d'établir un plan d'ensemble de protection contre le feu, un programme de développement professionnel et des programmes de prévision de l'incendie et d'inspection. M. Cardillo a ajouté que les services municipaux d'incendie doivent bénéficier d'une aide financière, qui par exemple pourrait être accordée sous forme de subventions proportionnelles au nombre d'habitants, semblables à celles octroyées à la protection policière. L'importance du problème de l'incendie est telle, qu'elle justifie la mise sur pied d'un conseil canadien de lutte contre l'incendie. On demande de plus en plus aux services d'incendie de remplir d'autres tâches telles que soins d'urgence, désincarcération et autres services de sauvetage. Ces services supplémentaires doivent être reconnus par un conseil de lutte contre l'incendie, sous peine de voir la valeur apparente d'un service d'incendie décliner, alors que la charge financière resterait la même.

Lors de la discussion qui a suivi les remarques de M. Cardillo, on a signalé que les subventions en capital sont parfois liées à des conditions désavantageuses. On a proposé que les villes soient en mesure de légiférer par-dessus les normes minimales, mais on a aussi observé que ce privilège n'est pas nécessairement avantageux lorsque comparé à l'uniformité.

L'exposé présenté par M. Bonser a permis de connaître la position de l'Association canadienne des chefs de pompiers (ACCP) concernant les recommandations du rapport. Il a signalé que des membres de l'ACCP estiment que certaines parties du rapport sont discutables et que certaines opinions manquent de pertinence ou d'objectivité; ainsi certaines remarques pourraient être néfastes si on les rendaient publiques. M. Bonser a ajouté que le rapport est très utile en ce qu'il définit la structure et la fonction des services canadiens d'incendie et offre des suggestions d'amélioration. L'ACCP est satisfaite de la réponse du CNRC concernant la demande d'étude du problème de l'incendie. L'ACCP a nommé un Comité pour la science et la technologie dont une des tâches consiste à étudier le rapport. Le Comité est, jusqu'à présent, satisfait de la réponse du CNRC au rapport et se réjouit de la mise sur pied du CARSI. Il importe de l'avis de M. Bonser de coordonner les activités de recherches, d'éviter les chevauchements et, en particulier, d'utiliser pleinement les ressources existantes. Il a de plus souligné l'importance des installations d'essais au feu à grande échelle du CNRC, ajoutant que les services de secrétariat fournis au CARSI devraient être augmentés pour assurer l'efficacité de ce dernier. L'ACCP estime que la suggestion de créer un conseil de lutte contre l'incendie mérite d'être encouragée; les chefs de pompiers l'appuieront dans la mesure où elle recevra le soutien de l'ACFMFC. Selon M. Bonser, le conseil de lutte contre l'incendie devrait comprendre des représentants de tous les domaines relatifs à l'incendie, y compris des chefs de pompiers. La lutte contre l'incendie au Canada est toujours sujette à amélioration. Cette tâche doit être entreprise

en tenant compte de ce qui peut être fait et ce que l'on doit faire. Il faut se garder de critiquer les activités antérieures et se concentrer sur ce qui a été accompli et sur ce qui devrait être entrepris. À son avis, le gouvernement fédéral devrait s'engager à soutenir tous les efforts destinés à améliorer la sécurité incendie au Canada.

Au cours de la discussion qui a suivi, l'importance des statistiques et leur influence sur l'amélioration de la réglementation, des codes et des normes ont été soulevées à plusieurs reprises. On a mentionné en particulier les statistiques uniformes relatives aux pertes par le feu en observant que, bien qu'elles n'offrent pas les informations spécifiques requises pour les codes et normes, elles peuvent révéler les tendances dans le domaine de l'incendie. On a observé que l'établissement de statistiques repose sur la participation des individus. L'examen détaillé d'incidents particuliers est souvent très utile et requiert une approche logique si on veut recueillir des informations pertinentes. Des statistiques précises et une recherche approfondie sont essentielles pour justifier les changements proposés aux codes et aux normes.

M. Gold a fait alors observer que le CNRC pourrait éprouver des difficultés à répondre à des demandes de soutien supplémentaire. Le CNRC a mis sur pied un Bureau du projet de la sécurité publique afin d'assurer un appui technique aux forces de police. M. Gold a évoqué les activités de l'Institut canadien de l'information scientifique et technique (ICIST), ajoutant qu'on pourrait établir un lien entre le secrétariat du CARSI et l'ICIST, afin de s'assurer que les services d'incendie aient accès à l'information.

M. Findlay a pris ensuite la parole en faisant remarquer que l'Association of Canadian Fire Marshals and Fire Commissioners (ACFMFC) était un des organismes à l'origine de cette étude. Le rapport comporte un certain nombre de critiques qui se révèlent toutefois constructives. Il a rappelé brièvement l'historique de l'ACFMFC qui fut formée en 1921 pour promouvoir la sécurité incendie au Canada. L'ACFMFC accepterait d'élargir son rôle, dans la mesure où les gouvernements y consentent, et d'assumer les fonctions du conseil de lutte contre l'incendie proposées par le rapport; pour ce faire, des changements organisationnels sont nécessaires.

L'exposé de M. Findlay a soulevé plusieurs remarques. On doit reconnaître aux directeurs et commissaires des incendies la responsabilité de conseiller leurs gouvernements respectifs sur les questions relatives à la sécurité incendie. Ils sont prêts à chercher conseil auprès d'autres organismes et à coordonner la contribution d'autres secteurs de la lutte contre l'incendie; il doivent cependant conserver la responsabilité d'appliquer les dispositions prévues par la loi. M. Bonser et plusieurs autres membres souhaitent la mise en oeuvre d'un mécanisme qui empêcherait d'empiéter sur cette responsabilité et qui favoriserait en même temps la contribution des nombreux organismes intéressés. Un membre a souligné qu'il appartenait aux municipalités, à l'industrie, aux services d'incendie et aux autres groupes concernés par les codes et les normes, de fournir l'information nécessaire à l'organisme proposé, de façon à le rendre aussi efficace que possible.

Le professeur Heinke a abordé la question de l'enseignement universitaire. Il a indiqué que les universités au Canada et aux États-Unis ne s'intéressent que

fort peu au domaine de la prévention des incendies. Selon lui, ce problème tient du fait que divers programmes spécialisés autrefois mis sur pied ont échoué, souvent en raison du faible intérêt des étudiants. Les universités ne sont pas très favorables à la création de nouveaux programmes, à moins qu'ils n'entraînent aucune dépense supplémentaire. Le professeur Heinke pense que l'université peut et doit faire davantage, mais que l'industrie de la prévention des incendies n'a pas présenté suffisamment d'arguments pour convaincre les universités des besoins qui existent. Le rôle des universités n'est pas encore clairement défini. Il n'est peut-être pas nécessaire d'instaurer des cours spéciaux dans chacune des provinces; cette question devrait toutefois être étudiée afin de déterminer les besoins. Il serait utile d'encourager une sensibilisation aux problèmes de l'incendie et peut-être de modifier le contenu des cours existants en y ajoutant le matériel pédagogique approprié. Des séances d'information destinées aux professeurs d'université pourraient être organisées dans le but de les familiariser avec les problèmes de l'incendie et de favoriser une prise de conscience de ces problèmes chez les étudiants en ingénierie et en architecture. Des programmes de spécialisation au niveau des études supérieures pourraient être créés. On a également suggéré la création d'un programme interdisciplinaire. M. Heinke a souligné la nécessité de disposer de toutes les données appropriées pour mettre au point de tels cours. Au niveau de la recherche universitaire, le professeur Heinke a indiqué qu'il serait plus facile pour les professeurs d'intégrer le problème de l'incendie à leurs disciplines si ce problème était défini correctement. Il a parlé des sources de financement au Canada et indiqué la possibilité de bénéficier de ces fonds en avançant des arguments pertinents.

Lors de la discussion, plusieurs points ont été soulevés concernant les cours donnés au Canada. M. Lamothe a mentionné l'Université de Montréal, déclarant qu'il n'existe au Québec que trente-deux ingénieurs travaillant dans le domaine de la science du feu; il a conclu que la demande est faible pour de tels cours. Il faudrait encourager l'introduction d'éléments relatifs à la sécurité incendie dans les cours d'ingénierie existants. On a évoqué les cours par correspondance et le fait que les Services du commissaire des incendies du Canada embauchent pendant l'été des étudiants en ingénierie, ce qui leur permet de s'initier aux problèmes pratiques de l'incendie. La proposition d'introduire la protection contre les incendies dans les cours du premier cycle a été critiquée par le professeur Heinke en raison des programmes déjà surchargés. M. Boehmer s'est inquiété des difficultés qu'éprouvent les ingénieurs de sécurité incendie à être reconnus par les associations provinciales d'ingénierie. Il a insisté également sur le fait que l'on doive faciliter l'accès à des cours de recyclage pour ceux qui travaillent déjà dans le domaine de l'ingénierie.

M. McCully a décrit la formation technique et administrative pour les services d'incendie en se basant sur son expérience au Collège Algonquin. Il a mentionné trois catégories d'emploi et la manière de satisfaire aux besoins de chacune. Les collèges Seneca et Algonquin dispensent depuis 1978 des programmes de deux ou trois ans dont le but est de permettre aux étudiants de faire des inspections, d'identifier les risques d'incendie et les lacunes au niveau des normes et des codes, ainsi que de préparer des recommandations en vue d'apporter des améliorations. Il a énuméré les sujets traités dans les

cours et cité des manuels et des ouvrages de référence tels que le NFPA, ULC, CNB et CNPI, en soulignant que 75 p. cent de l'examen est basé sur la connaissance des codes et des normes. Il existe deux catégories d'inspections: une qui porte sur la prévention des incendies et comprend l'inspection des immeubles et la sécurité des personnes; l'autre regroupe les enquêtes sur la protection contre l'incendie qui amènent à la rédaction de rapports détaillés sur les risques liés à l'usage des bâtiments et des systèmes de protection contre les incendies. Ces études de prévention et ces rapports s'avèrent extrêmement utiles aux responsables des services d'incendie.

La discussion s'est par la suite engagée sur les différences qui existent entre les cours de niveau universitaire et ceux destinés aux technologues et techniciens. M. McCully a relevé la nécessité d'évaluer les possibilités d'emploi pour les techniciens diplômés. Il a indiqué que la plupart des cours existants se donnent le jour et que, par conséquent, ils ne conviennent pas aux pompiers qui exercent leur profession. On a ensuite discuté des expériences menées sur la côte ouest et ailleurs en ce qui concerne la formation pré-emploi, en citant l'exemple des forces de police. Cette pratique permet une meilleure utilisation des ressources financières pour la formation du personnel. La question de la formation pendant les heures de travail ou en dehors des heures de travail a été soulevée ainsi que celle des programmes d'apprentissage. En Ontario particulièrement, la rénovation de bâtiments impose de nouvelles responsabilités pour les individus; les programmes de formation à Algonquin et Seneca s'avèrent particulièrement bien adaptés à ce problème. On a également relevé que dans certaines régions la formation des responsables du Code du bâtiment pose davantage de problèmes que celle des responsables des services d'incendie, étant donné que ces derniers sont mieux équipés et disposent de meilleures installations. Puisque le Code du bâtiment contient de nombreuses exigences en matière de sécurité incendie, il faudrait que les responsables du Code reçoivent une formation appropriée. En ce qui concerne l'élaboration de critères de formation ou d'un programme d'études type, on a signalé l'existence de ce dernier ainsi que la difficulté qu'on éprouve à le faire accepter. Actuellement, les dix provinces et les deux territoires définissent leurs propres critères de formation.

M. McLaren a fait part de ses expériences avec l'Association canadienne de sécurité incendie (ACSI) et a donné un aperçu de cet organisme. La ACSI est surtout présente dans la région de Toronto où elle compte 600 membres provenant de divers secteurs; environ 20 p. cent des membres représentent l'industrie. Elle organise des dîners-causeries et des séminaires d'une journée et contribue à la sécurité incendie par l'octroi de bourses. Ses membres sont bénévoles, ce qui rend difficile toute tentative d'expansion. M. McLaren a évoqué le programme d'exercice d'évacuation entrepris de concert avec le ministère de l'Éducation du gouvernement de l'Ontario. Ce genre d'activités pourrait bénéficier grandement de l'aide apportée par un conseil national de lutte contre l'incendie. L'ACSI pourrait également agir comme intermédiaire entre les individus et un tel conseil.

M. Findlay a mentionné un programme de prévention des incendies qui existe depuis 1959, l'Association canadienne de prévention des incendies, parrainée à la fois par l'ACCP et l'ACFMFC.

En conclusion, la discussion générale a porté sur la coordination nationale des organismes de lutte contre le feu par le biais d'un conseil national ou d'un congrès de lutte contre l'incendie. On a reconnu à nouveau que le rôle des provinces et des territoires dans la protection contre le feu est défini par la loi et qu'elles ont le dernier mot en la matière. L'ACFMFC est disposée à rechercher la participation d'autres organismes en se servant de sa structure existante ou éventuellement en l'élargissant. On a toutefois souligné à plusieurs reprises qu'il fallait se garder de supprimer les responsabilités juridiques des membres de l'ACFMFC. Certains modèles ont été proposés pour la mise en place de ce mécanisme, entre autre, l'organisation des administrateurs de la législation du travail qui reconnaît la responsabilité juridique de chacun mais estime possible de se rencontrer, de discuter et d'obtenir des informations qui sont retransmises à leurs organes décisionnels respectifs. On a aussi fait mention des inspecteurs d'installations électriques qui utilisent le Code canadien de l'électricité; leur organisation est structurée de façon à recueillir des données et à laisser les décisions finales aux autorités compétentes. Plusieurs participants ont jugé primordial qu'un conseil de lutte contre l'incendie se voulant efficace dans le domaine de l'éducation et désirant coordonner les efforts de protection contre le feu au Canada, puisse obtenir des données de sources variées et mettre sur pied des programmes. Le conseil de lutte contre l'incendie devrait admettre qu'il serait plus efficace à s'occuper des programmes qui dépassent les juridictions provinciales que des affaires relevant directement des gouvernements provinciaux.

En résumant ces divers points, M. Gold a attiré l'attention des participants sur deux types d'activités: celles qui requièrent uniquement l'échange d'informations ou la coordination et celles qui impliquent des démarches juridiques. On a relevé que bien que les membres de l'ACFMFC se rencontrent depuis de nombreuses années, ils le font d'une manière relativement non officielle tout en informant leurs ministres de leurs activités. Cependant, les commissaires et directeurs des incendies n'ont pas été réellement mandatés pour être en mesure de mettre sur pied un conseil de lutte contre l'incendie. On a signalé que certaines activités ne nécessitent pas l'approbation provinciale, par exemple la compilation de données statistiques sur les incendies.

M. Baird a conclu en déclarant qu'un conseil national de lutte contre l'incendie devrait faire fonction de banc d'essai pour la mise au point coordonnée des programmes de prévention des incendies; ce conseil devrait avoir un certain prestige et éventuellement une influence significative. À son avis, tous les secteurs des services d'incendie devraient y participer.

M. Gold a fait remarquer que le CNRC est conscient des divers problèmes qui ont été soulevés et déclaré que la proposition de l'ACFMFC offre tous les espoirs de répondre à la troisième recommandation faite au CNRC, reconnaissant toutefois la nécessité de poursuivre le débat sur les structures organisationnelles. La réunion s'est terminée par une brève discussion portant sur les modalités de participation d'autres organismes.

SUMMARY BY RAPPORTEUR

H.B. Dickens

We began this morning with a background statement by Dr. Gold giving the position of the National Research Council (NRC) on the report of the "Study on Fire Prevention and Control Systems in Canada". He reviewed the three recommendations directed in that report to NRC. NRC has acted on the first two, including the establishment of the Associate Committee on Research for the Fire Services (ACRFS), and today's meeting was called in response to the third recommendation. The purpose of the meeting is to bring together people with a common interest in this area to determine possible support for a fire council or fire congress. Dr. Gold outlined NRC's position on this matter, namely that the Council of NRC was not committed to any specific action but would be prepared to listen and would consider responding to any request that might be directed to it.

We were then presented with a brief summary of the formation and the initial work of the Associate Committee on Research for the Fire Services which Gordon Shorter chairs. He outlined the operations of that committee, which first met in November 1982. Its nineteen members have expertise in different fields, and there is balanced regional representation. The committee has begun to discuss some areas of concern such as hose couplings, protective clothing, smoke masks, foam tests, etc.

We next heard a presentation by Mr. Hugh Adam of the Standards Council of Canada (SCC), who had been asked to deal with codes and standards. He identified observations in the report that relate to codes and standards and made some comparisons of the potential impact of standards with the cost of producing them, noting that the fire cost in Canada represents 1.5% of the gross national product. He referred to problems with standards not necessarily related to cost, and indicated that there appeared to be no evidence of essential safety standards not being developed because of a lack of funds. He pointed out that some representations had been made to the SCC for funding to assist with committee work. One of these was a resolution from the Association of Canadian Fire Marshals and Fire Chiefs, which was accepted. However the SCC felt that further documentation on the need for funding was necessary. He noted that standardization is only one small element of the scope of the proposed fire council and drew attention to the fact that three fire councils already exist, operating under the auspices of Underwriters' Laboratories of Canada, Canadian Standards Association and Warnock-Hersey. He noted that there are certain common items and deliberations at these councils, as well as an element of competitiveness in their work. He thought the fact that there was some commonality in these councils, particularly in membership, might be examined for its implications to this recommendation.

During the discussion of Mr. Adam's remarks several points were made. One was that the fire council envisaged in the report would be more concerned with policies related to implementing the recommendations of the report, whereas the existing fire councils advise the bodies that they serve on specific problems. A point was also made concerning the need to fund standards committees sufficiently to ensure that technically qualified people are

available to provide the necessary input. It was also suggested that the provinces contribute to the funding of this work, recognizing that standards are used by many agencies in addition to those concerned with fire. Combined with this is the problem of convincing provincial officials of the advantages of contributing to national-level activities in the formulation of standards. Brief mention was made of the Provincial Advisory Committee on the National Building Code as an example of a coordinated provincial approach in the field of building codes.

Dr. Gold summed up at this point by saying that there appears to be a need for a more coordinated approach to funding; he noted NRC's own problems in providing support, even of such national activities as the NBC, NFC, and the new ACRFS. He stressed then, as he did during the rest of the discussions, the fact that NRC has limited resources and may not be able to respond fully to perceived needs.

Mr. Cardillo, speaking from his experience as Mayor of Kitchener and representing the municipal viewpoint, provided background on municipal activities. He stressed that each City Council has to acquaint itself with the importance of fire protection as a total community effort, and noted that standards established by the Ontario Fire Marshal's Office are certainly attainable and that every effort must be made to meet them. Mr. Cardillo spoke of the role of building and fire officials in enforcement of building and fire codes, and indicated that problems arise from uncertainties regarding final authority. He commented on the need for the proper expertise and the importance of a greater coordination and consolidation of these roles.

Mr. Cardillo felt that the proposals in the report in relation to fire prevention and education programs were valid and attainable with close cooperation and coordination by provinces and municipalities. However, municipalities must consult with builders and developers in the preparation and implementation of any mandatory or legislated requirements for qualification standards for persons responsible for fire protection systems if they are to be accepted. He spoke about the dual suppression/prevention role that was recommended for the fire services and said it would not necessarily create a demand for more fire fighters but would require additional training and cost to the municipality. With reference to the training and education of fire protection personnel, Mr. Cardillo mentioned that in most cases municipal fire departments rely upon the provincial authorities to define the standards and levels of training that ensure qualified personnel. Speaking on coordinating firefighting organizations, he indicated that the recommendation dealing with the development of formal mutual aid programs between municipalities would be desirable but difficult under present government structures. He noted that the fire service should be structured in regional fire departments to be effective in this role. There is no regional fire department in Ontario although police, health and social services do operate on a regional basis in the municipality of Waterloo. On upgrading the municipal fire systems, he said that the size and location of a municipality affect its capabilities. Unless substantial assistance and guidance are obtained, a municipality will be limited by its own resources. Re-examination of the fire department system is valid, however, because of the annual operating costs of municipal fire departments. He commented on the

desirability of establishing a master fire plan, including career development, pre-fire planning and inspection programs. He concluded that the municipal fire system should be helped, particularly financially. Mr. Cardillo mentioned the possibility of obtaining per capita grants similar to those provided for police protection. He said that the importance of the fire problem justifies the establishment of a Canadian fire council. Fire departments are increasingly called upon to deliver other services, such as emergency health care, extrication and other rescue services, so that a national fire council would need to recognize that these additional services are performed. Otherwise, one might find that the apparent value of a fire department declines while the cost burden remains the same.

In the discussion of Mr. Cardillo's remarks it was pointed out that capital grants sometimes have unfavourable strings attached. It was suggested that cities should be allowed to legislate above minimum standards, but it was also noted that this is not always advantageous; the advantages of uniformity could outweigh this privilege.

Mr. Bonser presented an overview of the position of the Canadian Association of Fire Chiefs (CAFC) with regard to the recommendations of the report. He noted that some members of the CAFC felt that parts of the report were rather critical and that some opinions were not relevant or of such a sensitive nature that public airing may do some harm. He said, however, that the report fulfilled a need by identifying the structure and function of the Canadian fire service and by offering suggestions for improvement. He said that the CAFC was pleased that the NRC had responded to the request to examine the fire problem. He reported that CAFC had appointed a Science and Technology Committee and one of its functions was to consider the report. The Committee feels that, to date, the NRC response to the report has been adequate and commends the establishment of the ACRFS. Stressing the importance of coordinating research activities, avoiding duplication and, in particular, making full use of existing research capabilities, he commented upon the value of the large scale fire test facilities of NRC. He discussed the importance of the secretariat services provided to the ACRFS, which would have to be increased to ensure ACRFS' effectiveness. In advancing the CAFC position Mr. Bonser said that the fire council proposal has merit, should be pursued, and would be supported by the fire chiefs, provided it receives support from the ACFMFC. He did feel that the fire council should have representation from all areas of the fire service, including the fire chiefs. The Canadian fire system can always be improved and this task must be approached in the light of what can and should be undertaken. He warned against being too critical of past performance and felt we should concentrate on what has been accomplished and what should be done. He thought that the federal government should provide support to any effort to improve the Canadian fire system.

In the discussion that followed there were several references to the importance of statistics and their impact on improving the regulations, codes and detailed standards. Specific reference was made to the uniform fire loss statistics, noting that while they may not offer the specific information that codes and standards require, they might identify trends in fire problems. A point also arose that gathering statistics depends on the involvement of people. In-depth studies of specific incidents are often valuable and require

a commonsense approach if the right kind of information is to be collected. Justifying proposed changes to codes and standards requires sound statistics and research.

At this point Dr. Gold noted that it may be difficult for NRC to provide the additional support that might be requested. He stated that NRC had set up a Public Safety Office to provide technical support for police forces. He noted the operation of the Canada Institute for Scientific and Technical Information (CISTI) and said that a link could be made between the secretariat for the ACRFS and CISTI to ensure that information is available to the fire services.

Mr. Findlay then spoke on the position of the Association of Canadian Fire Marshals and Fire Commissioners (ACFMFC). He indicated that ACFMFC had been one of the proponents of the study. He said that the report was critical in several areas, but that the criticism is useful. He briefly reviewed the background of the ACFMFC, which was formed in 1921 to promote fire safety in Canada. The ACFMFC would be agreeable to expanding its role, provided the respective governments agreed, and to assuming the functions of the national fire council proposed in the report, but he noted that organizational changes would be needed.

Several points arose during the discussion of Mr. Findlay's remarks. It must be recognized that fire marshals and fire commissioners have the responsibility to advise their governments on fire safety. They are prepared to seek advice from others in doing this, and to coordinate input from other areas in the fire service, but they must retain the responsibility for discharging the requirements of legislation. Mr. Bonser and others commented on the desirability of a mechanism that would allow this responsibility to be respected and not interfered with, yet at the same time that would allow input from a wide variety of sources having roles to play in the fire services. One member mentioned that the municipalities, industries, local fire services and others having an interest in codes and standards all have a responsibility to help by feeding information into this proposed body to make it as effective as possible.

Professor Heinke's presentation was on education at the university level. He indicated that universities in Canada and the United States have little involvement in education in the fire field. He said the problem for universities is that the various special interest programs undertaken in the past have often failed because of low student interest. He said universities are not too receptive to new programs unless they pay their way. He felt they can, and perhaps should, do more, but the fire industry has not made a strong enough case to convince universities of a need. It is not yet clear what role can be played by universities. He didn't think special courses were required in every province but this should be reviewed to determine the needs. He suggested it would be useful to encourage more recognition of the fire problem and perhaps to incorporate relevant material into existing courses. He said one might arrange for special lectures to acquaint the university staff with what can be included in engineering and architecture courses to raise the awareness of fire problems among students. He spoke about the creation of specialty programs, which should be at the graduate level. A cooperative program involving various disciplines was also suggested as an approach. He

expressed the need to have the right kind of specialist input when designing such courses. In discussing research at the universities, Professor Heinke pointed out that existing staff could apply their particular disciplines to the fire problem, if the fire problem were properly identified. He mentioned the grant sources in Canada and the possibility of obtaining funding through them if proper arguments are put forward.

A number of points about courses in Canada were raised during the discussion. Mr. Lamothe mentioned the University of Montreal. He said that in the Province of Quebec there are only about thirty-two engineers working as fire protection engineers; he concluded that there was a low demand for such courses. The introduction of fire safety considerations in existing engineering courses should be encouraged. There were comments on correspondence courses; and on the Office of the Fire Commissioner of Canada employing engineering students in the summer, thus introducing them to fire problems. Support for introducing material on fire protection into undergraduate courses was tempered by Professor Heinke's comments that course loads are full now. Mr. Boehmer cited the problem of obtaining recognition for fire protection engineers through the provincial engineering associations. He also said that there is a need to provide access to further education for those already working in engineering.

Mr. McCully gave a review of the technical and administrative training for the fire service from the point of view of his involvement at Algonquin College. He spoke of three categories of employment and cited how to meet the needs of each. He mentioned the two and three-year courses at Seneca and Algonquin Colleges and explained how these were started in 1978 and how they evolved. He said the aim was to enable students to make inspections, identify fire hazards and deficiencies in terms of standards and codes, and prepare recommendations for improvements. He outlined the topics covered in the courses and mentioned text and reference books such as NFPA, ULC, NBC, NFC, stressing that seventy-five percent of the examination content is based on knowledge of standards and codes. He said that there were two categories of inspections: fire prevention, which includes property inspection and life safety; and fire protection surveys where detailed reports are made of the occupancy hazard and fire protection systems, to assist those responsible for firefighting. He said preplanning of this kind was most helpful to the fire service.

There was a discussion of the differences between university level courses and those directed to technologists and technicians. Mr. McCully suggested the need to examine job opportunities as they exist for technical graduates. He indicated that these courses are given in the daytime and are thus not always available to fire fighters. There was also some discussion of experiences on the West Coast and elsewhere with pre-employment training; police force practices were cited as examples. This practice enables the department to make better use of its funds for training staff. The question of training during on-duty or off-duty time and apprenticeship programs were also discussed. In Ontario particularly, the programs of retrofitting buildings are placing new levels of responsibility on people; the training programs at Algonquin and Seneca can be of great benefit. The point was made that in some areas there are more problems with the training of building code officials

than of fire officials, as the latter are better equipped and have better facilities available. Because many of the fire requirements are in the building code there is a weakness if the building code official is not trained properly. Regarding the establishment of standard qualifications, or a standard curriculum for training, it was pointed out that there is a standard curriculum, but there are difficulties in getting it accepted. At present the ten provinces and two territories all make their own decisions on training qualifications.

Mr. McLaren related his experiences with the Canadian Fire Safety Association (CFSA) and provided some background information on the organization. CFSA operates primarily in the Toronto area and has 600 members; about twenty percent of the members represent industry. CFSA does its work through dinner meetings and one-day seminars, and supports fire safety by scholarships. It has no paid staff; thus, expansion is difficult. Mr. McLaren commented on work CFSA has done on a smoke drill program with the Ontario Ministry of Education. This type of activity could be assisted by a national fire council. The CFSA could provide an avenue of communications between individuals and a fire council.

Mr. Findlay mentioned a fire prevention program that has existed since 1959, known as Fire Prevention Canada. It is jointly sponsored by the CAFC and the ACFMFC.

Finally, there was a general discussion on national coordination of the fire interests through a fire council or congress. It was again recognized that the role of the provinces and territories in fire control is a legislated one and that the final say must lie with them. The ACFMFC is prepared to look for ways of obtaining input from others using its existing structure and perhaps expanding it, without abrogating the legal responsibilities of its members. This was stressed several times. Models were cited that might be considered in setting up this mechanism. One was the organization of the administrators of labour legislation, who recognize that they each have their own legal responsibility, but find it possible to meet and discuss and obtain input that is filtered back to their respective jurisdictions. There was also mention of the electrical inspectors working with the Canadian Electrical Code and the way their organization is structured to obtain input while leaving the final decisions to those having the authority. Several participants felt that for a fire council to be effective in the education field and to serve as a coordinator of the fire control effort in Canada, it was most important that it be able to obtain input from a wide range of interests and have some avenue for implementing programs. The fire council must recognize that it can more easily be effective in programs that transcend provincial boundaries than in matters that are a direct responsibility of provincial governments.

In summarizing these points, Dr. Gold drew attention to two kinds of activities: those that require only exchange of information and coordination; and those that affect legal actions. It was pointed out that although the ACFMFC has been meeting for many years, they do so in a relatively informal manner, keeping their Ministers aware of what they are doing. However, the individual fire marshals and commissioners have not really been mandated in the way that would allow them to set up a fire council at this time. It was

pointed out that some things can be done without provincial approval, such as collecting fire statistics.

Mr. Baird spoke near the end of the discussion. He stressed that a national fire council should act as a sounding board with the object of developing a coordinated approach to fire control programs; it should have prestige and, ultimately, clout. He felt that all the fire service sectors should be involved in it.

Dr. Gold noted that NRC is very much aware of the politics of the situation. He considered that the proposal by the ACFMFC offers a promising way of achieving the objective of the third recommendation to the NRC, recognizing that further discussion is needed regarding structure. The meeting concluded with a brief discussion of how other organizations could interact with such an effort.

ACTIONS OF NRC TO DATE

L.W. Gold

Mr. Findlay has mentioned that this activity began in 1976 when NRC received a brief endorsed by the ACFMFC and the CAFC. The brief requested that NRC establish a national committee on fire service equipment and methods, with the purpose of looking at improvements that would bring about better performance at the fire scene. When the brief was received the Division of Building Research was asked to prepare an initial response. This was sent to the Council of NRC along with the brief.

After considering the brief and the proposed action on it the Council decided that it did not have enough information to make a decision. One of the problems that NRC had at that time, and still has, is resources, both money and people. A positive response to the proposal would require both, and the Council was not prepared to make a decision until it had a full appreciation of the involvement required and of the situation at the fire scene in Canada. It set up an ad-hoc committee chaired by Mr. O.C.W. Allenby who was a Council member, together with Mr. D.E. Munn, another Council member, Mr. C.E. Scott from the Insurers' Advisory Organization, Mr. C.P. Wright, recently retired from the Canadian Underwriters' Association, and Mr. J.V. Arpin, who had been with the Public Works Department of the City of Montreal and had retired from that position.

The ad-hoc committee consulted widely with individuals and organizations. In its report it recognized that there was a lack of means of assessment of new equipment. It recognized the needs identified in the brief, and also pointed out the lack of a coordinating body to gather information, disseminate it, and set broad priorities for action. The ad-hoc committee also considered that there was insufficient information on the total fire prevention and control system in Canada to allow the NRC to determine what action it should take in this area. The ad-hoc committee recommended a fact-finding study to identify the needs of the total system. It also recognized in its report the possible need for some form of coordinating committee.

In response to the recommendations of the ad-hoc committee, the NRC sponsored a study of fire prevention and control systems in Canada. It invited Mr. Ross Switzer to guide that study. Mr. Switzer pointed out that it would take about two years to do, and he was to retire in the middle of that period. Public Works Canada, for whom he worked at that time, kindly agreed to let him commence the study during his last year as Dominion Fire Commissioner. We were able to get the services of Mr. Donal Baird from the Insurers' Advisory Organization, who joined NRC for two years to assist Mr. Switzer and help write the report. NRC set up a steering committee to guide the activity, composed of eight people. Their names are listed in the study report and I think four are at this table.

The report was published in 1980. It broadly covered the field defined by its title: "Study on Fire Prevention and Control Systems in Canada". It contained recommendations directed to various constituencies within that system, and in particular there were three recommendations to NRC. The Division of Building Research was asked to assist the Council in responding to those three.

The first recommendation was to bring the findings of the study to the attention of the appropriate officials at the three levels of government - municipal, provincial and federal. This was done. The second was to establish a fire service research and resource group. NRC set up an Associate Committee on Research for the Fire Services, this being a normal means by which NRC addresses national problems of this nature. The membership was drawn from individuals having knowledge of the subject to be considered and its sensitivities. Mr. Gordon Shorter, recently retired, agreed to chair the committee for three to five years. He will be reporting on the actions of the committee to date, after I finish. You will find in the material before you the Terms of Reference for the Associate Committee (page 42).

The third recommendation was the difficult one, and NRC recognized this from the outset. NRC was called upon "to convoke a congress made up of the provincial minister responsible for fire protection in each province and territory, or his deputy minister, to consider the report and the recommendation that a Canada-wide representative fire council be established". The President of the NRC, Dr. Larkin Kerwin, wrote to the individuals in the provinces and territories responsible for fire protection, asking if they were willing to participate in such a meeting. A majority indicated in the initial response that they were willing. NRC convened a meeting of representatives of the provinces and territories on 20 July 1982 to determine the form of the congress, how it should be organized, and to prepare an agenda. Not all the provinces and territories, unfortunately, attended the meeting. From the meeting a positive sense developed that the congress should take place. Subsequently, it became clear that the majority of provinces and territories did not wish to participate in that kind of congress at this time, but rather they would prefer that the recommendation be taken up initially with the ACFMFC. I would like to quote a paragraph from a letter sent to Dr. Kerwin by Mr. Young, the Minister of Labour for Alberta. It summarizes the position taken by most provinces and territories on this matter:

> "Alberta recommends that the question of whether there should be a National Fire Council should be directed to the next annual meeting of the ACFMFC. Alberta also recommends that the senior government policy advisors consider whether the desired inputs from other fire prevention groups might be gained by a restructuring of the agenda of this meeting. Those officials may also wish to consider what items they may wish to recommend to their respective Ministers as worthy of a Ministerial meeting."

This paragraph and subsequent positions taken by other provinces clearly indicated that the people who are responsible for fire matters in the provinces and territories look to their fire marshals and commissioners for policy advice in this area.

In response to this view, Dr. Kerwin wrote to Mr. Findlay in November 1982 enquiring if the association would be willing to join NRC in holding a meeting, and asking if it would be possible to include others who would represent the points of view of the various interests in the fire prevention and control system. The ACFMFC agreed to this and suggested the date of 13 July 1983 as an appropriate time that would coincide with its annual meeting. We received word of this in March, with L.Col. MacLean being appointed as the ACFMFC representative for developing the agenda and the list of participants. I have been working with L.Col. MacLean since that time in developing the program.

I would like to make the NRC position quite clear. We are responding to the intent, as we have interpreted it, of the third recommendation. That is, that NRC is to provide an opportunity for considering the need for a more formal means of communication and cooperation among the major elements of the Canadian fire prevention and control system. NRC feels quite comfortable about setting up an Associate Committee to consider, encourage and support research and development and the production of technical information. That has been an accepted and recognised role for NRC. But other areas referred to by Switzer and Baird in the report lie outside this well-known mandate. I refer particularly to the proposed fire council that would provide coordination and advice on such matters as fire safety programs, training and education for fire services and public fire safety education. Within its mandate, there are things the NRC could do that might help, although this can only be at the invitation of the people having the responsibility in those areas and with their full cooperation.

The NRC appreciates the opportunity provided by the ACFMFC to consider the conclusions and recommendations of the report of the study and, in particular, to address the intent of the third recommendation to it.

The principal objective of this meeting is to consider the need for a committee or body that would have a coordinating and advisory role for research and development, production of technical information, public fire safety education, training and education for the fire service, and fire safety programs. These are essentially the subjects identified in the report that should be addressed by the proposed fire council.

With regard to the agenda for today, the morning is to provide an opportunity for general presentations, particularly from representatives of the four major constituents of the fire protection and control system: codes and standards, municipalities, the fire services, and the fire marshals and fire commissioners. Time restraints dictated that we go to known individuals in each field whose presentations would be representative of each interest in the fire scene. The afternoon session is structured to examine specifically the areas that Switzer and Baird thought a fire council should address. This was done to ensure meeting our objectives for the day. The questions outlined in the material that was distributed to you (page 41) present some topics that might be considered. They are suggested simply to help with the discussions.

Mr. Brian Dickens has agreed to serve as Rapporteur. The discussions of this meeting and its Proceedings will assist the ACFMFC in deciding what further action it may take and what advice its members may wish to pass on to their respective Ministers. NRC will be looking at the results of this meeting to determine what further action it may take concerning the Switzer-Baird Report and its recommendations.

THE ASSOCIATE COMMITTEE ON RESEARCH FOR THE FIRE SERVICES

G.W. Shorter

A number of years ago I represented the National Research Council for several years on the Associate Committee for Forest Fire Control. We were concerned with technical problems such as water drops, the necessary characteristics of aircraft, and detection of forest fires. In the latter case there developed a cooperative program with industry in developing sensors for infrared radiation or for carbon monoxide in the air, and NRC became involved in research and in assistance with the industrial contracts.

There are parallels here with my present connection with the Associate Committee on Research for the Fire Services (ACRFS). NRC appointed me to the chairmanship of the ACRFS in 1982, and nineteen members were then appointed, chosen on a balanced regional and sectoral basis from industry, fire marshals, fire chiefs, technical colleges and universities.

The first meeting was held in November 1982 with all members present. The main accent of the Terms of Reference of the Committee (page 42) is that this is a technical committee. We will try to keep within the limits of what is generally recognised as technical. At the first meeting a rough list was compiled of a large number of areas considered to require technical research and development assistance. We then established a subcommittee to develop a more detailed program for research, and Chief Bonser agreed to serve as the chairman. There are eleven members, eight of them from the main committee, the three others being Bill Maudsley, Percy Clark and Don Bryan.

The subcommittee has met twice at the Toronto Fire Academy. In February of this year the list of areas of concern was reviewed and divided up into short, medium and long-term categories. In June we discussed action based on the work already accomplished and the previously established priorities. I will

identify four from the long list: hose couplings, protective clothing, escape masks for civilian use, and testing of foam agents. Presentations were received from people knowledgeable in these areas or having special concerns. At the next meeting of the Associate Committee, which will be later this year, I hope we can zero in on one or two projects that can be undertaken directly through NRC or by others. One of the roles of an Associate Committee is to encourage or assist others to participate in necessary work.

The last thing I should mention is the role of information collection and transfer to develop an awareness of research and development within the fire service as well as to serve their information needs. It will be necessary to establish an information bank, an activity to which the Secretariat provided by NRC will have much to contribute.

CODES AND STANDARDS

H.D. Adam

The purpose of these comments is to identify those observations in the Switzer-Baird Report that relate to codes and standards, in the hope of stimulating further discussion by members of this forum.

I found the cost figures in the report rather dramatic. When the authors assess the cost of fire in Canada as 1½% of the gross national product, I reflect that although the cost of preparing standards is not insignificant, by comparison with the non-productive national cost of fires it would seem that there is a high potential for demonstrating that codes and standards activities are cost-effective even if they only reduce the national cost marginally. I shall focus on some observations in the report dealing with standards.

First, the report suggests that provinces should explore the economics and efficiency of standardization of apparatus and equipment. This appears an eminently sound proposal. I am not aware of any specific studies by the provinces but am familiar with the ULC work in this area.

Some will recall that in 1977, upon a request from the ACFMFC, the Standards Council of Canada agreed to provide $80,000 to ULC to assist in the preparation of standards for firefighting apparatus. By 1979 approximately $21,000 had been spent. Investigation at that time indicated that delays in completing the project were not related to funding. Further funding was discontinued. In 1981, ULC Standard S515 on automobile firefighting apparatus was issued and a further standard covering the configuration of fire trucks is under development. Norm Pearce provided a status report earlier this week, emphasizing some of the complexities involved in proceeding with this project. ULC S543, on quick connect couplings and adaptors, is now out for ballotting, as reported earlier this week. It seems this standard will make a significant contribution to the resolution of interface problems that have been identified in the report.

Fire fighter protective equipment and clothing was also identified by the ACFMFC as a concern. As a result of this request to the SCC, CSA undertook an investigation to determine the degree of support in terms of money and expertise needed to proceed with this project. The required support was not identified and on the recommendation of the CAFC the project was suspended pending the result of a U.S. study, F.I.R.E.S., with which we are all familiar. To my knowledge this particular research program is still not completed.

The report makes clear the importance of design and research work in support of standards development. I believe the presentation by Gordon Shorter indicates that a potential exists for this recommendation of the report to be addressed by his committee, e.g., couplings and clothing, which are clearly standards-related subjects.

Second, the report says that governments and standard writing organizations should reassess:

- the appropriateness of regulations and procedures;
- the relevance of new technology;
- the relevance of statistical data on fires;
- the appropriateness of basic approaches to the fire hazard in buildings.

No one could argue with these observations on a conceptual basis. Standards are deemed to be dynamic, using the process of concensus, combined with representation of all interests in the standards writing committees, to ensure that standards will change to reflect new technology and philosophies. My observation begs the question: are the facts consistent with these concepts? If not, what should we do about it?

The report recommends that the financial deficiencies of the voluntary concensus standards system, and the potential role of the SCC in helping to overcome these deficiencies, should be examined. It is not entirely clear to me what these deficiencies are, nor whether they are real or perceived. The ACFMFC attempted to address this issue. It passed a resolution in 1980 expressing concern "that lack of adequate funds may curb or delay the preparation of standards dealing with safety". The resolution was forwarded to the SCC to evaluate the problem. The SCC accepted this resolution in principle and agreed to proceed with a study on the financing of standardization activities in Canada, provided that the concerns could be identified in a more precise manner. We consulted with standards writing organizations. We asked members of the ACFMFC to identify specific situations leading to the resolution. Replies from the standards-writing organizations and from members of the ACFMFC were obtained. The results of these consultations were basically that there is:

- no evidence of any safety standard not being developed for lack of funds, but concern by some members of ACFMFC that this might happen in the future;
- some evidence for concern over lack of funding for travel of members to standards-writing committee meetings;

- some evidence that provincial authorities have difficulty in responding to requests for funding to assist in preparation of specific standards.

These appeared to be concerns of individual members. The SCC decided not to proceed with the funding study until concerns of wider relevance could be definitely established.

Third, a major recommendation of the report was the establishment of a Canada-wide representative fire council. The concept of this council is very broad and it is recognized that the standardization development activity is only a small element of this broader scope. The recommendation does cause one to reflect on the current situation in the standardization world where three independent fire councils are maintained by organizations primarily involved with fire concerns. Without making any judgment on whether this arrangement is good or bad, I would like to raise a few relevant points:

- On the surface the present system reflects a degree of inefficiency in terms of duplication of administration in the councils, and clearly there is a commonality in the items being discussed within these councils.
- There is an understandable degree of competitiveness between organizations involved in the preparation of standards and in the performance of certification functions, but I ask the question: would a single council result in an inhibited disclosure of information and consequently a reduction in the effectiveness and purpose obtained with the independent councils?
- All three existing councils are basically the same; they have the same membership from the regulatory and consultative authorities in the provinces and territories. My opinion is that because of this common membership, the ACFMFC is the body in the best position to judge the suitability of the present situation, and it is this body of people that could be most influential in causing the present arrangements to change if it is deemed desirable.

Finally, this presentation was prepared to provide a background for your discussions. It is my own view that fire prevention and control are very important aspects of our society. I believe the main problem is that many of those responsible for fire safety at the provincial level, where the constitutional authority rests, have been unable to effectively convince their political masters of the importance of this activity and thereby establish themselves in a position of influence when political decisions are made and priorities are established. With the appropriate degree of visibility and influence, the necessary resources in terms of money and manpower will be made available and many of the concerns that I have identified will be resolved.

Discussion

Mr. Pearce: It is necessary to be clear about the distinction between the proposed national fire council and the various existing fire councils serving the standards and testing organizations. The former was seen in the study as being a policy type of group, whereas the latter serve an advisory function on

specific problems in the areas of concern to the bodies that they serve. The ACFMFC had recognized the possibility of such misinterpretation and suggested other terminology such as National Fire Committee.

Mr. Adam: All valid input should be sought. This could be achieved with proper backing and funding.

Mr. Lamothe: The people best qualified to sit on technical committees often cannot participate. Industry has the incentive and the funds and may have more influence than one would wish, simply through the default of other interests. It is essential to identify the best brains and make sure they take part in all types of meetings, providing financial support if necessary. Balloting by mail is not an adequate substitute for physical presence at discussions.

Mr. Pearce: In standards development, the criteria for committee members must include proper regional representation and interest representation. Sometimes funding assistance is necessary to ensure the attendance of people who need to be there.

Mr. Adam: There is a need for data that will convince provinces of the cost-effectiveness of national-level activities as compared with individual provincial efforts to achieve similar end results. It seems acceptable that there should be a coordinating body structured so that common interests could be examined as a group.

Mr. Pearce: Such a forum would provide a means for communicating views among groups that don't interface on all sides. Today's meeting is an example of such a forum.

Dr. Gold (following a discussion of the provincial advisory councils on the building code): There is a need to define and justify the requirements for support for individual travel. NRC provides support for the travel of members of the various Associate Committees, but this is done within a limited budget, and support is limited in terms of human as well as financial resources. There could well be some form of support from the provinces. The fire and building code Associate Committees are entirely NRC-funded.

THE MUNICIPAL VIEWPOINT

D.V.P. Cardillo

The City of Kitchener has a population of 141,438 and in 1982 the strength of the Fire Department was 179. There were 1,665 alarms, and a fire loss of $837,026 at a department cost of $7,837,000 or $56.34 per capita. This compares with 1974 as follows: strength of 148 with 1,190 alarms, population of 119,545, fire loss of $504,240 and department cost of $2,588,000 or $21.65 per capita. These costs reflect operating and capital costs.

City Council must recognize the importance of fire protection and that it is a total community effort. This importance is reflected in the insurance rates

and the tax dollars that are spent. A municipality has consultants, or the Fire Marshal's Office, that can give advice on ways to save tax dollars or suggest improvements to be made. The Council of the City of Kitchener has benefited from this for some departments, but unfortunately it deleted a $30,000 study of our fire department. We should not have deviated from our initial policy of carrying out an in-house study of our present procedures for all departments. The standards set out by the Fire Marshal's Office are certainly attainable and every effort must be made to this end. Municipalities must strive together to work with organizations that have a direct influence on the costs of fire protection and there must be mutual confidence between them as they continue in these efforts.

The following comments are made with respect to certain of the recommendations of the "Study on Fire Prevention and Control Systems in Canada".

The Role of the Fire Marshal and Commissioner; Code Enforcement Rationalization

The issue here is which government agency is to have authority in fire safety matters and in matters relating to the enforcement of the Fire and Building Codes. The study suggests that this authority should lie with the Fire Marshal and the local fire department.

There is a contrary view that final authority should lie with the local Chief Building Official and at the provincial level with the related provincial ministry.

In Ontario, the province has been moving somewhat in the direction of this latter view. Responsibility for the building code has recently been transferred to the jurisdiction of the Ministry of Municipal Affairs and Housing. Elements of the Fire Code relating to new building construction may be included within the building code itself, thus enhancing the role of the Chief Building Official.

There is still a great deal of confusion and overlap with regard to enforcing fire matters in new building construction. At the local level, our building inspection staff are obviously involved, as are our fire prevention officers. However, in addition to this there are separate provincial inspectors where hotels are involved, and the Department of Labour is still involved in approving plans for major industrial or commercial structures.

Greater coordination or consolidation of these roles would obviously be of benefit. Whether the final authority should rest with the fire department or the building inspection department on a local level is somewhat debatable. In Kitchener, there is excellent cooperation between these two municipal divisions and no real problem is encountered. This is not always the case in other municipalities.

One important factor, in Ontario at least, is the Ontario Fire Code, which ensures a uniform inspection standard. This makes possible a better trained, more knowledgeable fire prevention officer who may very well be a member of the fire fighting force. Disparities between inspection practices in

villages, towns or cities should disappear because the standard is no longer a municipal by-law.

Fire Prevention and Education Programs

The areas that the report proposes for inclusion are valid. The objectives can be attained by close cooperation and coordination of policy and activity by both the province and its municipalities.

The education system may provide nominal (once or twice per school year) opportunity to present fire safety material or involvement by the students. Mandatory (legislated) requirements for qualification standards for persons responsible for fire protection systems cannot be addressed by a municipality without risk of avoidance by builders and developers.

A major shift of firefighting forces into the dual suppression/prevention role is recommended in the report. This would not, in itself, create a demand for additional fire fighters. However, it would in all likelihood require additional training for fire fighters in fire prevention officer duties. In the normal course, improvement in work qualifications results in requests for higher compensation. In all likelihood this would, ultimately, result in a higher cost to the municipality.

Training and Education of Fire Protection Personnel

Municipal fire departments, in the majority of cases in Canada, are reliant on provincial authorities to define the standards and levels of training that are necessary to ensure that qualified and efficient personnel are available to perform their role at the municipal level. A review of recruitment standards and training procedures is necessary to ensure that qualified personnel are entering the fire service, and career development programs are necessary to prepare employees with management skills for their future administrative roles.

Coordination of Fire Fighting Organizations

This recommendation deals with developing formal mutual aid programs between municipalities. This would be desirable but difficult under our present structure of government. It would really mean the fire service should be structured in regional fire departments to be totally effective. There is no regional fire department in Ontario, although police, health and social services operate on a regional basis in the Regional Municipality of Waterloo.

Upgrading the Municipal Fire System

It should be kept in mind that the size and location of a municipality have a large bearing on the ability of the community to provide adequate fire protection without substantial assistance and guidance. The re-examination by municipalities of their fire protection system makes sense when one realizes the financial investment at stake in the community and the annual operating cost of the municipal fire department.

- A master fire plan should be developed for the community, identifying the fire problem and suggesting short, medium and long-term goals and objectives to reduce the risks to lives and property.
- Career development programs could accomplish this with emphasis on management development or enrichment programs.
- Pre-fire planning and inspection programs should be developed and implemented with the on-duty suppression force, to secure full utilization of the available resources.

Conclusion

The municipal fire protection system should be helped in many ways. One that has been touched on, but not specifically addressed, is finances. Per capita grants, similar to those provided for police protection, specifically conditional upon utilization for fire protection by a fire department, could be a big help. This might lead to a more visible presence, better training, salaries for part-time staff in small communities, and improved equipment including communication equipment. The importance of the fire problem may well call for the establishment of a Canadian fire council. However, fire departments, as the report points out, are called upon more and more to deliver other services such as emergency health care, extrication and other rescue services, so that such a council necessarily would need to recognize that these services are performed. Otherwise, the value of a fire department to a community might appear to decline while the cost burden remained the same; for example, increased inspections might fail to reduce the fire loss while emergency health response declined because of unavailability of personnel.

THE FIRE SERVICE VIEWPOINT

B.A. Bonser

My purpose is to give an overview of the position of the Canadian Association of Fire Chiefs with respect to the study and its recommendations, especially as they pertain to NRC.

The National Research Council commissioned this study as a result of a brief submitted by the Association of Canadian Fire Marshals and Fire Commissioners and the Canadian Association of Fire Chiefs, as well as on the recommendation of an ad-hoc committee that reviewed this brief.

The principal object of the study was to examine and identify the structure and effectiveness of the fire prevention and control systems in Canada. The study team was expected to prepare a number of comments and recommendations that would summarize their findings. The steering committee had an opportunity to review the conclusions and recommendations of the study team and although they may not have agreed totally with the findings, it is safe to say that there is agreement on the need for a concerted and coordinated effort if we are to adequately cope with the fire problem. There was considerable opportunity for input by the many fire chiefs who were interviewed by the study team.

Since the report was published and distributed, the CAFC has been assessing the comments and opinions of its membership regarding the conclusions and recommendations of the report. There have been complaints and criticisms that portions of the report are too critical of the current efforts being taken to control the fire problem in Canada. There are also those who believe that some of the opinions expressed in the text of the report are not relevant, or are of such a sensitive nature that more harm may be done by public airing or by attempting to pursue remedial measures where there is no certainty that the results will be positive and productive. There is general agreement, however, that the report has fulfilled a need and purpose by identifying the structure and functions of the prevention and control systems in Canada, as well as offering suggestions and alternatives on how we may improve our efforts and better utilize our resources.

The CAFC has attempted to ensure that the report and its conclusions and recommendations receive wide circulation and discussion in the fire service community. Many of the recommendations were based on the obvious potential for improving the level of fire prevention and protection by adopting the experiences and practices of certain municipalities and areas of the country. A continuing effort is being made to encourage this development through the resources available to our organization. The subjects of public education, fire prevention, arson, training standards and qualifications, research, code enforcement, and legislation, have been and will continue to be a major activity of our association. We are pleased to see these matters addressed in the report.

At the meeting of the Board of Directors of the CAFC, at the conclusion of our annual meeting in Winnipeg, August 1982, a Science and Technology Committee was established to review certain areas of interest and concern that could not be dealt with by the regular standing committee. One of the assignments of this committee is to review the conclusions and recommendations of the "Study on Fire Prevention and Control Systems in Canada". The committee held their first meeting last month and although their report has not been forwarded to the Board of Directors at this time, I requested that the committee provide me with a copy of the minutes of their meeting, to enable me to discuss their observations and comments today.

At this time, I would like to comment on the three recommendations to the National Research Council outlined on Page 104 of the report.

- The first recommendation: NRC has published and distributed the report in a manner that has assured that the appropriate officials, who can respond to the matters raised, are fully aware of its content.

- The second recommendation: The establishment of the Associate Committee on Research for the Fire Services should adequately fulfill the intent of this recommendation as well as provide a continuing review of research needs. Expanding on this topic, I would concur with Gordon Shorter's comments. To date the ACRFS has established some priorities and short, medium and long-term goals. There should be an ongoing identification of areas where technical research is required, and the ACRFS has attempted to define the scope of what it understands

by the term "research". The ACRFS will be of great value in years to come to the fire services of this country. The fire service should make all possible use of the research facilities available at NRC, particularly the excellent Fire Research Field Station. The resources of the Secretariat provided by NRC will have to be increased if the ACRFS is to be effective. I see the future needs as increasing substantially. On the role of the Secretariat as a central agency for information, both North American and international sources should be used, and existing information should be fully explored to avoid duplication of efforts in other countries.

- The third recommendation: The proposal to establish a Canadian fire council has merit and should not be discarded due to the obvious political difficulties in receiving unanimous country-wide approval for such a fire council. If general acceptance on the principle of this proposal is received from the Fire Marshals and Fire Commissioners, and the Fire Chiefs, then we should proceed to achieve this goal. The next step could be the convening of a meeting of persons who have a direct interest and involvement in this subject for the purpose of drafting terms of reference for the Canadian fire council, including the objectives, operating policies and procedures, and membership matrix. The CAFC is supportive to this type of proposal and willing to assist in the development of such a committee.

Knowing the difficulty that NRC had in dealing with this undertaking on the interprovincial level, I feel that if a fire council is to be dealt with at the level of the ACFMFC, membership on the council should be structured to include all areas of fire service interests in the country.

There is one other area that I would like to comment on. I have spoken with the chairman of our Science and Technology Committee regarding the CAFC point of view on the study. We find it difficult to take the position of endorsing the document, as a document, as opposed to receiving it as a matter of information. It contains some material that is pertinent and timely, some that is already in the past, and some that pertains to things that cannot be changed. For example, the municipal tax assessment is the main source of financing for dealing with the fire problem in Canada. This may not be the sole proper means for funding fire protection, but it probably cannot be changed, so we must make certain that the money being gathered in this way is spent in the best manner possible.

One should not be unduly critical of the fire protection and control system we have now in Canada. It is not a bad one. It is an evolving thing, so there is room for improvement and refinement from time to time. The systems that other countries have arrived at have been influenced by their individual histories of development and political organization. Our recent examination of the system in China made this clear to me.

The CAFC is prepared to participate in any effort that is undertaken at the national level. The federal government should be involved; it is unthinkable that there should be no direction coming from the national level. There should be more funding from the national level, and activities should be

coordinated on a nation-wide basis by a national body. The National Research Council and the Associate Committee on Research for the Fire Services evidently should both have a role in such an undertaking.

From an organizational point of view, the CAFC endorses and supports the actions of the NRC, who commissioned the study and made subsequent efforts to comply to the report's recommendations. In closing, I personally wish to thank you for the invitation to participate in this meeting.

Discussion

General discussion covered the role of statistical information in guiding the development and revision of building codes, the difficulty of identifying problem areas from the types of statistics commonly collected, and the complementary role of in-depth investigations of specific fire incidents.

Mr. MacKay: The support and cooperation of individual fire chiefs is essential for the success of statistical reports and fire studies.

Dr. Gold: Such information from across the country is valuable to NRC as a codes-writing organization; NRC has done fire investigations in the past, but recently has not had the resources to undertake such.

Mr. Lamothe: The Province of Quebec views the fire problem not as a single national one, but rather as ten or twelve individual local problems. Quebec is willing to participate with groups like NRC that work nationally, but control should remain at the provincial or territorial level. The ACFMFC should be the agency for handling any collective decisions that might be needed. Quebec cannot agree with a national council, concerned with control, that would involve persons other than those having statutory responsibility.

Dr. Gold: In the matter of providing technical support to the fire services, staff resources are a difficult situation at NRC at present. A clearly identified national voice from the fire services would strengthen NRC's case. It is the intention of the National Research Council to develop an effective Secretariat for the Associate Committee on Research for the Fire Services. This Secretariat would have links with the Canada Institute for Scientific and Technical Information (CISTI), which has a national capability for collecting and disseminating information, so that information of interest to the fire services would be available to regional or city libraries through the CISTI computer network.

AN EXPANDED ROLE FOR THE ASSOCIATION OF CANADIAN FIRE MARSHALS AND FIRE COMMISSIONERS

C. Findlay

- The Association of Canadian Fire Marshals and Fire Commissioners (ACFMFC) is a national organization established "to promote a better understanding among its members, to study uniformity of legislation and generally to promote fire safety."

- Organized in 1921, the Association provides a means for close consultation among its members. The Association, augmented by standing committees, provides a vehicle for conducting activities in the field of fire loss prevention.

- In accordance with the views expressed by a majority of their respective ministers, the members of the Association of Canadian Fire Marshals and Fire Commissioners have reviewed the recommendation of the National Research Council "Study on Fire Prevention and Control Systems in Canada" that a national fire council be established. After considering the aforementioned recommendation, the ACFMFC members have decided to recommend to their governments that the ACFMFC carry out the functions of a national fire council as proposed in the NRC study. To this end, some organizational changes will be necessary.

Discussion

Mr. Perreault: Will the ACFMFC fire council need a secretariat, and is it felt that NRC might assist?

Mr. Findlay: The ACFMFC will provide any secretariat function, and may ask NRC to participate in some way.

Dr. Gold: The Vice-President (Laboratories) of NRC has agreed that NRC would be willing to receive a request to assist. I cannot be more positive at this time, since a decision of the NRC Council would be required. However, if after today the ACFMFC feels NRC could play some supportive role, NRC would be prepared to consider any overtures made in this direction.

Mr. Boehmer: In setting up a committee one normally works on a matrix basis with input from the various sectors involved. The fire service involves a wide scope of activities, yet it appears the proposed matrix is entirely centred on the fire marshals and fire commissioners.

Mr. Lamothe: Those are the only people who should be on the main fire council, but there could be any number of supporting committees to provide the advice that will be needed.

Mr. Findlay: It will be necessary now for us to get word on this back to our ministers and clear up some of the misconceptions of the last year or so.

Mr. Lamothe: The provinces are not prepared to give up control, but the ministers need a funnelling agency and several have expressed the view that it should be this body.

Mr. MacKay: The fire marshals have the responsibiity to advise the provinces, but we must structure things so that we can get advice from as many sources as possible.

Mr. Bonser: The Canadian Association of Fire Chiefs would wish to have a representative on any national fire council that may be established. I am pleased otherwise to see the proposal that has been put forward and the

unanimity of support within the ACFMFC. However, the fire council is an important matter and there should be opportunities for further discussion. Although this is a provincial jurisdiction, part of the responsibility is passed on to the municipalities. Private industry also has responsibilities and other organizations also have a concern. I feel it is not the best way to proceed that the fire council should represent only one group.

Mr. McLaren: As representative of a peripheral group I support Mr. Bonser's position. Such a body should be as fully representative as it can be.

PROBLEMS IN DEVELOPING UNIVERSITY LEVEL EDUCATION IN THE FIRE FIELD

G.W. Heinke

My comments today will address three points: my background and perspective at the university level and in fire prevention; an indication of what I think is happening at the university level in fire education and research; and what I think is possible if the right group of people steer this matter in the right way.

Prior to joining the University of Toronto I was in the consulting business in the municipal field for about ten years in the Toronto area. I have been with the University for eighteen years, the last nine as Chairman of the Department of Civil Engineering. Over the last fifteen years I have done work in the Canadian North related to improving the municipal services situation in communities and construction camps. I worked with a joint Canada-U.S. group in the preparation of a manual of northern engineering practice. It became obvious that there should be a chapter on fire protection, and it also became clear that no one knew much about this. With the help of people in the North, a three-year study was conducted on the fire experience of the Northwest Territories, the Yukon Territory, Alaska and Greenland. The report of that study, published about a year ago, contained a number of recommendations directed primarily at the small northern community level.

That has been my total experience in the fire protection field. It was on the basis of this limited experience that I was invited to join the Associate Committee on Research for the Fire Services. This is a good indication that the pool of expertise on fire research available at the universities is small.

As I just remarked, very little fire protection education and research is being done now in the universities in the architectural, engineering and management faculties. In this I agree fully with the statements in the Switzer Report. Not much is being done in the United States, but certainly there is more than in Canada. Why is this so?

To start with, very few staff have direct interest and experience, so there is no internal thrust to try to establish something. Any outside agency would be well advised to try to find an internal pusher if it wishes to initiate positive action. Further, there is a history of trouble and failure when universities have established special interest programs. Specialized programs

have at times been established in a number of areas, for example in ceramic engineering, and they have appeared because someone has pushed. With some exceptions they have largely been failures and most were abolished. One of the causes of such failures is low student demand, for various reasons. Another is the attitude of the special interest groups themselves, who usually look for a broad-based education followed by in-house training in the industry itself.

Another explanation of the lack of fire protection courses in universities is that the fire industry has not made a strong case as to why the universities should do this. It is imperative that they make their case. I would also be very suspicious of an eager university offering to do all kinds of things for the fire industry. That might perhaps indicate to me that this university is in some difficulty and is looking for more business. A fire program would require a broad range of backgrounds from various departments in the university. One must also choose carefully where to introduce specialist programs across the country. I don't think one in every province can be justified.

Finally, finances are a problem for universities at present: they are more in the business of closing programs than opening new ones, and they are having to examine things that do not seem to be paying their way. They could and should do more, but in trying to involve universities more at this time you must recognise the constraints one is up against in the current climate. In recent years provincial bodies (e.g. the provincial engineering associations) have taken their responsibilities in the continuing education area more seriously and have begun to offer short courses, often in association with universities. Such efforts have at times been directed at special interest areas.

The third point I mentioned in opening was the question of what is possible at the university level if things are done in the right way. This is divided into three categories.

- General awareness of the importance of fire: students in architecture or civil engineering at present may not even hear the word "fire" during their four-year program in some universities. This is bad. The problem can be corrected most easily by working with the staff giving existing courses, not by adding a course entitled "Fire xxxx". The undergraduate curriculum is far too busy as it is. In undergraduate courses, fire considerations could be inserted where they are relevant, as an aspect that has to be taken into account. In civil engineering an obvious one is the design of water distribution systems for fire protection purposes. Another idea your Association (the ACFMFC) might consider is having an annual lecturer travel across the country, giving seminars at universities to practicing engineers, for example, case studies on prominent fires, what can be learned from them and what engineers should do. It should be remembered that they are not aiming to become fire protection engineers; but hopefully they will design buildings with a greater degree of enlightenment. That sort of thing would be welcomed by the universities, because in such areas they simply cannot have the in-house expertise. The lecturer could also aid staff in introducing fire protection concepts into their courses and assist by providing suitable printed material. The net result would be to improve the students' awareness factor regarding fire protection.

- Creation of a specialist program can only occur at the graduate level, where you can give the civil, chemical or industrial engineer a twelve to eighteen-month program in fire protection engineering. This would probably have to be a cooperative effort among several disciplines, not a separate, new, graduate department. Some universities have made a limited start in that direction. For example, the University of Toronto has offered a course for a number of years on the fire protection of building structures, given by the late Bill Stanzak. It is an indication of the difficulty of finding qualified people that since Bill's death the course has had to be discontinued as we could find no one to replace him. Much work needs to be done to define the content of a specialist curriculum - what courses should be offered, and so on. In the United States, specialist courses are being offered at Worcester Polytechnic and elsewhere.

- The third category, research, is probably the easiest one to address. There is no question that in universities there are people who have relevant expertise in the sciences (physics and chemistry), engineering and architecture, but who are not currently working on the fire problem. The reason may be a heavy work load and interests in other areas. Also the lack of focus and of a funding mechanism for fire research is causing the low output in fire research. Researchers at the universities are a breed that seek out money where it will be found. Your organization (the ACFMFC) might enter into discussions with the Natural Sciences and Engineering Research Council (NSERC), which is in the business of funding research at the university level and represents a well-established system, yet does not identify fire at all. I know from my own involvement with NSERC that practically no one is doing fire studies.

  I believe that research at the universities could be stimulated by putting together some program that would identify a special grant, or setting aside some money that would be publicly identified as being available for fire-related research, administered by an interdisciplinary committee of NSERC. One or two people from your own organization should serve on the committee, together with university researchers from the relevant disciplines capable of evaluating proposals, to ensure that good and practical research on fire is being sponsored. Good publicity will no doubt produce good results in terms of research proposals. I have some ideas on how this might be established and how it could be steered through the steps needed to make it happen at universities.

Discussion

Mr. Lamothe: In Quebec only thirty-two engineers are working full-time in fire safety. There is no need for a specialist degree program, but engineers in general should have an awareness of fire safety.

Mr. Jessop: The International Association of Fire Fighters runs an open learning program, mainly for people in the fire service, which leads to a degree via correspondence. This is supported financially by the United States National Fire Academy. Several hundred people are enrolled at present including four or five Canadians. The program has had a fair degree of success.

Mr. Whatmough: The long-term staffing program of the Office of the Fire Commissioner of Canada includes hiring engineering students for the summer, or in a cooperative program. They work with senior fire protection engineers. The objectives for each student for each four-month stint are outlined, and we assess the degree of achievement before they return to the university.

Mr. L.W. Vaughan (Consultant, Canadian Steel Construction Council): I feel Professor Heinke did not sufficiently emphasize the need. In both Part 3 and Part 4 of the National Building Code, fire is the dominant aspect. There is an urgent need for university students to graduate with some knowledge of fire engineering. I realize the curriculum load that already exists, but feel it is of major importance that there be fire protection education at the undergraduate level. It is a top priority that codes people and design people understand the implications of fire, rather than just talking about trade-offs.

Professor Heinke: I definitely see a need to introduce the whole question of fire into undergraduate programs, but one cannot justify a specialist program when only four or five persons are applying each year. The professional organizations have to carry a responsibility in such cases.

Mr. Cardoulis: In Newfoundland, the Association of Professional Engineers in association with Memorial University's extension service, has for several years been offering fire protection seminars. These have become so popular that their length is to be increased to four days. There will probably be two seminars each year. This is a way of offsetting the lack of formal courses.

TRAINING AND EDUCATION OF FIRE PROTECTION PERSONNEL

J.J. McCully

I entered the fire protection field upon graduation from McGill University, and worked as a fire protection consultant for several years before joining the staff of Algonquin College. Since 1978 I have been coordinator of the College's Fire Protection and Safety Program, in the Department of Science and Mathematics.

We have heard that fire education at the university level is at an embryonic or thinking stage. I would like to tell you about what we are doing at Algonquin. I believe there is a demand in Canada for this type of training. The Society of Fire Protection Engineers (SFPE) studied North America a few years ago, finding very significant demands. This morning's discussions, for example, revealed the amount of training needed to gather statistics or to carry out investigations.

There will be a variety of concepts, perhaps, even among this group, on what an educational and training program should consist of, and I suspect that to cover all areas of concern there may well have to be more than one profile. At the risk of oversimplifying the very detailed description in the Switzer Study of for whom and where educational programs are required, I would propose three categories for consideration:

- for qualification for employment;
- for employees with highly specialized areas of responsibility;
- for employees with less specialized areas of responsibility.

The first program would obviously serve to raise the standard of education, whether it be at the university degree level or a technician/technologist fire protection course. Once it becomes mandatory for an employee to have certain qualifications it becomes relatively easier to provide short term courses for upgrading and specialization. In the case of employees without formal education long-term programs are, generally speaking, out of the question and short-term two week programs would be relatively ineffectual.

For the other two categories the programs would be structured to upgrade and provide specialization under a continuing education scheme.

Fire protection engineering is now recognised as a specialist category by the Ontario Association of Professional Engineers. However, it is not taught as a subject in any Canadian university. The Montreal-Ottawa Chapter of SFPE attempted to get a course started at the University of Ottawa, but the university could not budget this, and was not conscious of any demand.

Technician/technologist courses in fire protection are given in Canada at Seneca and Algonquin Colleges, located in Toronto and Ottawa respectively. Seneca offers both two and three year courses; Algonquin offers a two year course only. The Algonquin program started in 1969 and until 1978 was oriented mainly to training students for employment with fire departments. The Advisory Committee for the program decided then that the curriculum should be structured to teach the broad range of industrial fire protection and safety. In addition to other related subjects, the program includes studies in mathematics, science and communication skills.

Since 1978 there has been an average of eighteen to twenty in the graduating classes. The placement rate in the first two years was ninety percent but more recently it has dropped to sixty-eight percent, no doubt due to the economic downturn. For the year 1983, starting this September, there were approximately one hundred and twenty applicants but only thirty-three can be accommodated. Each applicant is given a half-hour interview. We find that twenty-five to thirty percent indicate they wish to be employed in fire departments.

The aims and objectives of this program are to train students to make inspections of industrial, commercial or institutional buildings; to have the ability to make observations of conditions affecting property protection and life safety; to compare these conditions with requirements of codes and

standards; and, most importantly, to have the ability to prepare detailed recommendations for improvements.

I thought it would be helpful to give you some information on the Fire Protection Program at Algonquin. Students are required to be grade twelve high school graduates and have level four mathematics. The four semesters cover ... (Mr. McCully here reviewed the course outline reproduced on page 43). We emphasize codes and standards throughout, using the national codes because students are placed coast to coast. Knowledge of hardware is considered fundamental and accounts for twenty-five percent of the final mark. Recommendations and applications (i.e., knowledge of standards and codes) account for the balance. A number of service courses are provided from other departments of Algonquin. Training of our students is primarily by lecture. A training laboratory for hands-on use has not yet been provided although it is considered vital.

In regard to inspections of properties by the fire services, we assume two basic categories:

- Fire Prevention: This takes into consideration property protection and life safety. This would include high buildings, phased evacuation, voice communication procedures, and so on.
- Fire Protection Surveys: The students at Algonquin are prepared for making detailed reports of building construction, including horizontal and vertical fire separations, occupancy details, and all of the fire occupancy equipment and systems, together with recommendations showing deviations from standards and codes requirements.

Those in charge of firefighting strategies can study the detailed reports of the inspectors for preplanning fire attacks, rather than having to structure their strategies after the fire has broken out, when they may be approaching a plant for the first time. A brief version of the preplanning report can be consulted at the time of a fire, to refresh their memories, or in more affluent municipalities the complete data on each building, stored in a computer, will be displayed on a monitor in the cab of the fire truck. Preparing such reports requires people who are trained in what to look for during the inspections.

The Algonquin College program includes a field trip to Underwriters' Laboratories of Canada. The full day visit includes lectures and demonstrations of fire protection equipment and test facilities - and incidentally a free lunch. We also visit the National Research Council's facilities in Ottawa and their field station at Almonte. Arrangements are made each year for students to carry out inspections in at least three industrial plants.

The program is recognized by the SFPE. Students are able to join as student grade members, and upon graduation they are given Technologist grade membership.

Discussion

Mr. Anderson: The priorities in considering a fire service training program are, first, to establish the training standards that must be met, and, second, to ensure that existing personnel have opportunities to receive training. I would personally set a lower priority on the use of available resources for pre-employment training. We are attempting to get an apprenticeship program funded by the municipalities. Fire officer programs would follow, fire science degrees coming later still.

Dr. Gold: It seems reasonable to state that a variety of approaches exist across the country. Is there a need at some stage to examine the question of qualifications and how they compare from one region to another, and perhaps to develop them in such a way that they would provide guidance to people like Jim McCully who are concerned with establishing programs at the community college level?

Mr. Anderson: The ACFMFC is on record as endorsing the NFPA and IFSTA Standards for training.

Mr. MacKay: We all agree with those standards, but still it appears that there are ten provinces and two territories all making their own decisions on fire service matters. We are working toward uniformity.

Mr. Jessop: In British Columbia there is cooperation between the fire fighters' union and the chiefs. In New Brunswick the problem is the difficulty of giving people time to attend the fire academy. The Ontario union has no interest in an apprenticeship program. Throughout the country there is a degree of interest but not high acceptance as yet. The older fire fighter's interest is in knowing where he would fit in.

Mr. Pearce: Achievement of some degree of uniformity would be assisted by development of a standard or guide which could be used for direction but not necessarily adopted in whole.

FIRE SAFETY PROGRAMS

W. McLaren

The title of the organization that I represent is the Canadian Fire Safety Association. We have six hundred corporate and individual members, a diversified group comprising fire fighters, engineers, manufacturers and suppliers, architects, building managers, and anyone involved with fire safety. Although most of our membership now is in the Toronto area, it was envisioned when CFSA was founded twelve years ago that there would be a wider geographic spread.

We would like to expand CFSA activities to other cities, but so far have not been successful, partly because of the lack of a core of interest and partly because of the need for paid staff to support a larger effort. However, if a local group were to ask our aid in starting up, we would gladly provide a

financial contribution and the benefit of our experience. The success in Toronto has been due to the quality of our members and the quality of the speakers we can obtain.

We can draw on varied people for presentations to committees and the like; for example, several of our members have testified at the Webber enquiry on high-rise fire safety. We have six dinner meetings per year with invited speakers, and in addition hold an annual one-day seminar which this year was on high-rise fire safety. There was an attendance of four hundred, with presentations given at an excellent level.

The Association is run by a board on a voluntary basis. The objective of CFSA is to promote fire safety through education and by providing forums for discussion of topical technical and philosophical issues. As part of our education program we recognize the academic achievements of students in the fire safety technology courses at Seneca and Algonquin Colleges by the award of scholarships. This year there were four scholarships of $250 at each college. In addition, the top fire technology student from any recognized college or university is presented with the H.W. Peter Stainsby Memorial Award, named after a former fire marshal of Ontario.

In other education activities, we have attempted to pilot a smoke drill program, working with the Ontario Ministry of Education. Although the idea was well received by all concerned, we encountered frustrations in carrying it out. If a fire council existed to which CFSA could turn, it would be possible to seek help in obtaining the right people to coordinate such activities and assist in implementing them.

CFSA supports without hesitation the concept of a fire council. The Association would seek to retain its own identity, as a focus for individuals having concerns. We could act as a channel to forward these through to the council if need be. The Association and its members constantly seek to be a part of the fire safety effort wherever they can be effective.

GENERAL DISCUSSION

The Chairman called for broad discussion with respect to the formation of a coordinating advisory body of some kind. The ensuing discussion indicated that it was strongly felt that the Ministers would in any case seek the advice of their fire marshals or fire commissioners on resolutions on fire safety addressed to them. The ACFMFC should serve as a coordinating body to assure uniformity of response. In matters of legislation or control, the fire marshals or commissioners are normally called upon to make the last evaluation of any proposals; the ACFMFC is the appropriate body to evaluate and set priorities, and should be the funnel by which the Ministers are approached.

Mr. Pearce: Many individuals and groups are sincerely interested in developing information and positions that would help fire marshals and fire commissioners implement decisions in their own jurisdictions. There is a need to ensure that they can provide input. The constitution of any coordinating

body should be such that these people have equal status and not be second class citizens.

Mr. Lamothe: Legislators would feel the coordinating body must comprise only of people who have the same viewpoint as their minister. My government is not prepared to see a fire council made up of special interest groups that would make the final evaluations. My minister, and five others, have indicated there must not be any new structure.

Mr. MacKay: The fire council's concerns should be subjects that transcend provincial boundaries, those where there is a commonality of interest. The fire council must not dictate to any province what goes on inside that province and how it runs its programs.

Dr. Gold: To summarize discussion to this point, there are two levels of problems. First, there are questions that can be addressed if the right people are represented and actions can be taken on the authority already present in that group. The other level comprises questions that require approval by jurisdictions, which the fire marshals and fire commissioners must refer to their ministers for decision. At this second level, a council can only be advisory in function.

Mr. D.M. Baird (Insurers' Advisory Organization of Canada): The essence behind the recommendation concerning establishment of a national fire council was that it was perceived that no existing organizations were achieving, or capable of achieving, certain objectives. There seems to be a need for a council or body that would provide a focus on the fire situation, a place where everyone would come together. Wide representation is necessary. It should function as a sounding board or forum for the whole system, and be an instrument to promote inter-governmental cooperation. This does not mean dictating to anyone, but trying to influence them. Influence with governments, media, and the public generally is really the crux of the matter, bearing in mind the many jurisdictions. Central bodies that exert influence and have prestige exist in other countries, and we should be able to do the same. This body must develop clout. It was clear to Mr. Switzer and me that the ACFMFC, being only direct servants of government, could not do it. The organization must have all fire service sectors involved, including not only the peripheral areas of the fire protection sector, but also community sectors that are not directly linked with the fire efforts. The body must be able to offer criticism on actions by governments.

Mr. Bonser: I suggest that the CAFC would want to retain the prerogative of dealing directly on some matters with the municipal, provincial or federal governments. We do this now and we find it effective in reaching objectives. In structuring another body we must avoid inhibiting or stifling other organizations from presenting their viewpoints directly. On the other hand, the prospect of formalizing the structure of the ACFMFC with endorsement by the provinces has been an achievement today. I am the first to support this, but the CAFC must retain its prerogatives.

APPENDIX 1 LIST OF PARTICIPANTS

NRC	L.W. Gold	(Meeting Chairman)
	A.M. Phillips	(Recorder)
ACFMFC	C. Findlay (President)	(Nova Scotia)
	J.N. Cardoulis	(Newfoundland)
	R. Kennedy	(Prince Edward Island)
	G. Elliott	(New Brunswick)
	G. Lamothe	(Quebec)
	J.R. Bateman	(Ontario)
	A. Thorimbert	(Manitoba)
	R. Gawley	(Saskatchewan)
	W.D. Mackay	(Alberta)
	G.R. Anderson	(British Columbia)
	L. Hipperson	(Yukon)
	L.D. McPhee	(Northwest Territories)
	R.G. Whatmough	(Public Works Canada)
	L. MacLean	(National Defence)
	L. Lamarche	(Secretary, ACFMFC)
Guests	H.D. Adam	(Director, Standards Council of Canada)
	D.J. Boehmer	(Vice-President, Rolf Jensen & Associates)
	B.A. Bonser	(Chief, Toronto Fire Department)
	L.F. Burns	(Chief, Courtenay Volunteer Fire Department)
	D.V.P. Cardillo	(Mayor, City of Kitchener, Ontario)
	J. Cranford	(Director of Communications, Insurance Bureau of Canada)
	G.W. Heinke	(Chairman, Department of Civil Engineering, University of Toronto)
	J. Jessop	(Director, International Association of Fire Fighters)
	J.J. McCully	(Algonquin College - Fire Protection and Safety Technology)
	W. McLaren	(President, Canadian Fire Safety Association)
	N.S. Pearce	(Vice-President and Chief Engineer, Underwriters' Laboratories of Canada)
	F. Perreault	(Chairman, Standing Committee on Part 3, Associate Committee on the National Building Code)
	G.W. Shorter	(Chairman, Associate Committee on Research for the Fire Services)
Rapporteur		
	H.B. Dickens	(Retired)

APPENDIX 2 AGENDA

1.	Introduction	
2.	Actions of NRC to date	L.W. Gold
3.	Associate Committee on Research for the Fire Services (a brief report on activities to date)	G.W. Shorter
4.	Codes and standards	H. Adam
1015	COFFEE	
5.	Municipalities	D. Cardillo
6.	Fire Service	B. Bonser
7.	Fire Marshals and Fire Commissioners	C. Findlay
1230	LUNCH	
8.	(a) Training and education of fire protection personnel	G.W. Heinke J.J. McCully
	(b) Fire safety programs and their coordination	W. McLaren
1530	COFFEE	
9.	Summary and closing discussion	

APPENDIX 3 QUESTIONS FOR DISCUSSION

The following questions have been formulated for Agenda Item 8 to guide the discussion in the afternoon session. It is not the intention to limit discussion by posing these questions and associated topics, but rather to ensure that consideration is given to subjects that are directly relevant to the third recommendation to the National Research Council.

Training and Education of Fire Protection Personnel

- Technical and administrative training programs for the fire service: need; availability; establishment of qualifications; standardization of course material; technical and administrative specialties; training facilities.
- University level education in fire sciences and fire protection engineering: need; availability; establishment of professional qualifications; development of course material.

Fire Safety Programs and Their Coordination

- Fire safety programs: increased emphasis on fire prevention; greater role of fire service in fire prevention education and in inspection; preparation and distribution of fire prevention educational literature, films and other fire safety material; development of technical information.
- National coordination: need for a national committee or body that would play a coordinating and advisory role for training and educational programs, for production of technical information, and for other programs aimed at increasing firefighting and prevention capability in Canada.

APPENDIX 4 TERMS OF REFERENCE OF THE ASSOCIATE COMMITTEE ON RESEARCH FOR THE FIRE SERVICES

The Associate Committee on Research for the Fire Services was established by the National Research Council on 29 September 1981. The origin of the Committee can be traced to a brief presented to the Council of NRC in 1976 proposing NRC involvement in improving the performance of fire services in Canada. An ad-hoc committee set up by Council in response to the brief recommended a study of the needs, the possible formation of a coordinating national fire council, and technological support from NRC. Such a study was commissioned by Council. Its findings included a recommendation that NRC take initiatives to create a fire service research and resource group responding to an advisory committee. The Associate Committee and its Secretariat were subseqently established with the purpose of initiating research and development activities at NRC and elsewhere and to provide technical advice to the Canadian fire services and the national fire council should one be formed. Following are the terms of reference for the Committee:

- To advise the NRC, and on request, federal and provincial government departments and agencies, and other interested groups on research and development pertaining to the fire services.
- To provide a national forum whereby specialists from the various regions and sectors in the area of fire service equipment and techniques can meet to formulate guidelines for Research and Development.
- To encourage greater liaison between industry, government agencies and universities to better serve the Research and Development needs of the fire services.
- To act as a focal point for the exchange of relevant technical information nationally and internationally.
- To constitute subcommittees to conduct specialized studies in such areas as the Committee deems appropriate.
- To carry out such other studies and tasks as may be directed by the National Research Council.

APPENDIX 5 ALGONQUIN COLLEGE FIRE PROTECTION PROGRAM

First Semester

Chemical and Physical Characteristics of Fire
Types of Fire
Types of Extinguishers
Types of Extinguishing
Organizations in Fire Field
Terms and Definitions
Installation Spacing of Extinguishers
Flammable and Combustible Liquids and Gases
Hazardous Locations, Electrical Equipment
Smoke Movement in High Buildings

Second Semester

Fire Detection Devices -- Heat, Smoke and Flame
Design and Installation

Sprinkler Systems (4 types)
Principle of Operation, Installation, Testing

Extinguishing Systems -- Standpipe and Hose

Heating Equipment -- Oil Burners, Furnaces, Boilers, Heat Exchangers

Introduction to Building Construction
Test Methods, Steiner Tunnel, Floor and Wall Furnaces

Third Semester

Water Supplies -- Municipal and Private Systems

Tanks, Reservoirs, Pumps, Valves, Hydrants

Waterflow Tests, Pump Tests, Installation of Underground Mains, Hydrostatic Pressure Tests

High Piling of Commodities in Warehouses, General Storage and Rack Storage, Calculations for Required Water Flow and Pressure and Determination of Sprinkler System Design Data

Fourth Semester

Report Writing
Application of work in first three semesters to Plant Visits

Preparation of Detailed Reports of Building Construction, Occupancy, Common Hazards and Process Hazards, Fire Protection Equipment, Recommendations.

Texts and Reference Books

NFPA Handbook
NFPA Fire Codes (Standards)
National Building Code of Canada
National Fire Code of Canada
Underwriters' Laboratories of Canada Lists of Equipment and Building Materials
Factory Mutual Fire Protection Data Sheets

Other Subjects Covered in the Two Year Program are --

Mathematics
Physics
Chemistry
Building Construction
Sprinkler Design
Communications
Computer Programming
Security
Industrial Safety
Risk Management
Blueprint Reading and Drafting